

### **DETAILED ACTION**

Claims 9, 11, 12, and 18 have been amended; claims 10 and 14 are cancelled; claims 1-8, 19, and 20 are withdrawn from consideration as being directed to a non-elected group and claims 9, 11-13, and 15-18 remain for examination. Claim 9 is an independent claim.

### ***Status of the Previous Rejection***

The previous objection of claims 11, 12, and 18 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been withdrawn in view of the amendment filed on 2/4/2010.

The previous rejection of claims 9, 14, 15, 17, and 18 under 35 U.S.C. 102(b) as anticipated by Horimura Hiroyuki (JP 04-354837, thereafter JP'837, with the machine translation) has been withdrawn in view of the amendment filed on 2/4/2010. However, upon further consideration, a new ground(s) of rejection is made as following.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9, 11-13, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horimura Hiroyuki (JP 04-354837, thereafter JP'837, with the machine translation) in view of Ikeda et al (US 6,919,003 B2, thereafter, US'003).

JP'837 is applied to claims 9, 14, 15, 17, and 18 for the same reason as stated in the previous office action marked 11/4/2009.

Regarding the newly amended claim 9, JP'837 does not specify simultaneously applying a DC magnetic and AC electrical field for applying electromagnetic vibration. However, applying an external electromagnetic force without via the electrode is a well known technique, which is evidenced by US'003. US'003 teaches an apparatus and process for producing electrophoretic device (Title and abstract of US'003). US'003 teaches:"... It is also possible to apply external electromagnetic force without via the electrodes 5002 are 5004. In this instance, it is preferred to simultaneously apply a DC voltage of, e.g., +15 volts, to both electrodes, of a polarity identical to the charge polarity of the charged phoretic particles 5009 in the dispersion liquid medium 5008 so as to promote the diffusion of the charged phoretic particles in the dispersion liquid medium 5008. It is also possible to apply an AC voltage for promoting the diffusion of the charged phoretic particles" (Col.33, lines

8-17 of US'003). Therefore, it would have been obvious to one skilled in the art to simultaneously apply a DC magnetic and an AC electrical field for applying electromagnetic vibration force as demonstrated by US'003 in the process of JP'837 because US'003 this technique is preferred to be used in a liquid medium (Col.33, lines 18-23 of US'003).

Regarding the amended feature in the instant claim 18, JP'837 teaches controlling the heating (table 1-2 of JP'837) and vibration conditions (Paragraph [0015] and fig.5 of JP'837) in order to obtain the desired amorphous alloy, which reads on the limitation of adjusting the vibrating force and temperature conditions as recited in the instant claim.

Regarding the amendments in the instant claims 11 and 12, US'003 teaches the frequency may be selected from a range of 10Hz to 100kHz (Col.33, lines 24-31 of US'003), choose different DC and AC (Examples 5-1 to 5-6), which will lead to the changing of the magnetic field strength and the electromagnetic vibration force.

JP'837 in view of US'003 is applied to claims 11-13 and 16 for the same reason as stated in the previous office action marked 11/4/2009.

***Response to Arguments***

Applicant's arguments filed 2/4/2010 have been fully considered but they are not persuasive. The applicant argues:

1) JP'837 discloses applying vibration at a temperature below the crystallization temperature  $T_x$  which is below the melting point of material. Thus JP'837 fails to disclose or suggest applying electromagnetic vibrating force to a molten metal as recited in the instant claim 9.

2) US'003 does not cure the deficiencies of JP'837 because US'003 does not disclose or suggest applying electromagnetic vibrating force to a molten metal and particularly applying a direct current magnetic field and an alternating current electrical field simultaneously on the molten metal as recited in the instant claim 9.

In response,

Regarding the argument 1) and 2), JP'837 teaches heating and holding the raw material in a super-cooled liquid state and activating an ultrasonic resonator for vibration to form amorphous raw material (Abstract of JP'837), which reads on applying electromagnetic vibrating force to a molten metal as recited in the instant claims because super-cooled liquid metal is one type of molten metal.

Still regarding the argument 2), as pointed out in the previous office action marked 11/4/2009, US'003 teaches an apparatus and process for producing electrophoretic device (Title and abstract of US'003). US'003 teaches: "... It is also possible to apply external electromagnetic force without via the electrodes 5002 are 5004. In this instance, it is preferred to simultaneously apply a DC voltage of, e.g., +15

volts, to both electrodes, of a polarity identical to the charge polarity of the charged phoretic particles 5009 in the dispersion liquid medium 5008 so as to promote the diffusion of the charged phoretic particles in the dispersion liquid medium 5008. It is also possible to apply an AC voltage for promoting the diffusion of the charged phoretic particles" (Col.33, lines 8-17 of US'003). US'003 clearly teaches applying direct current magnetic field and an alternating current electrical field simultaneously on a liquid medium. The detail discussions and motivation for combining the prior arts can refer to the previous office action marked 11/4/2009.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/ Roy King/  
Supervisory Patent Examiner, Art Unit 1793